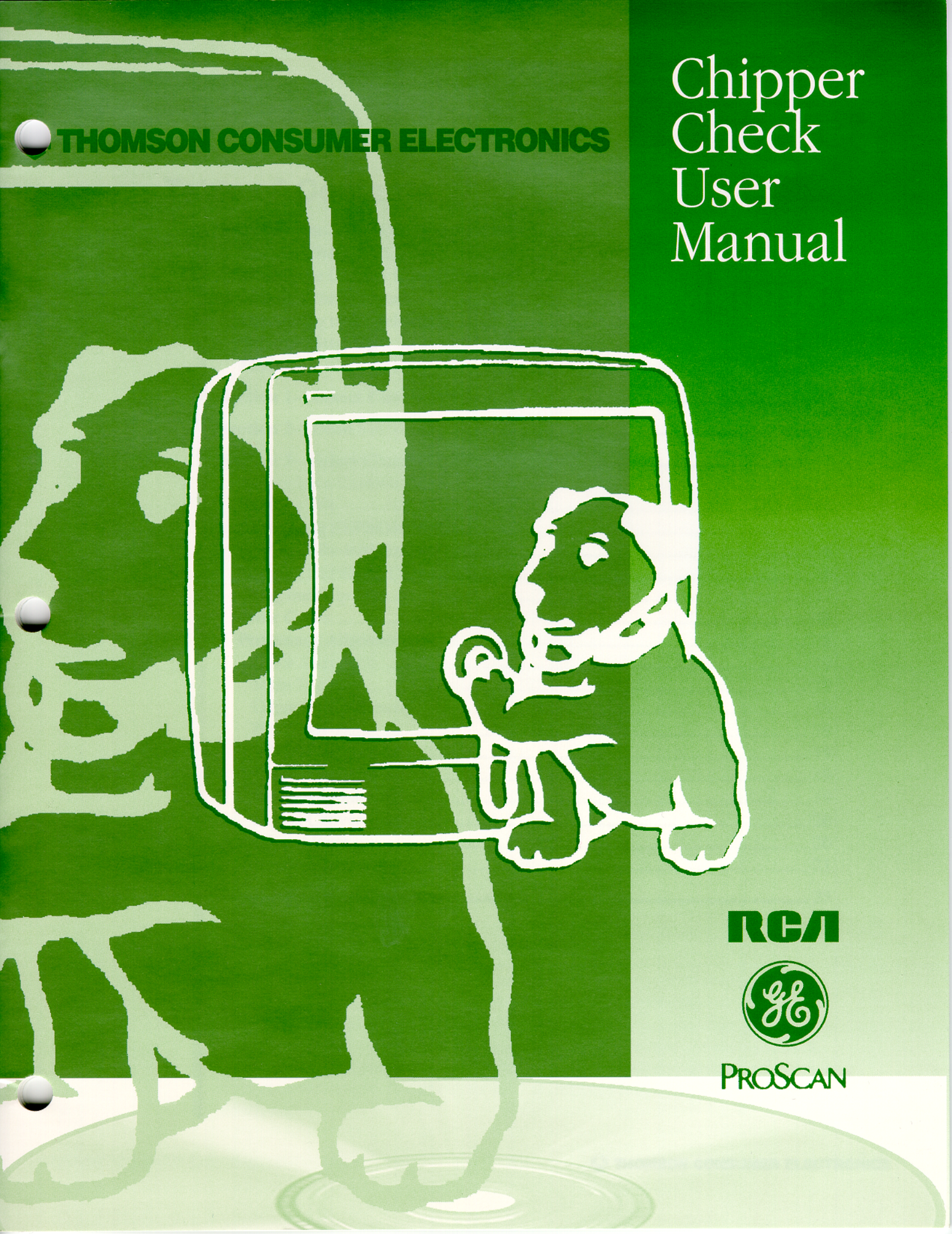
THOMSON CONSUMER ELECTRONICS

Chipper Check User Manual



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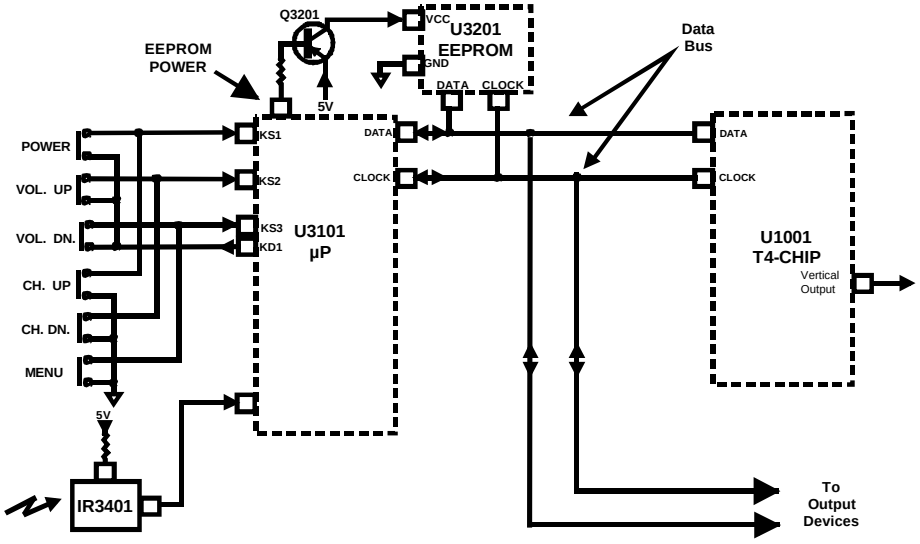
Introduction — What is Chipper Check?

Most modern television receivers are computer controlled. The alignments are no longer performed by adjusting a ***potentiometer***. Rather, they have been ***replaced by a digital value*** stored in memory and converted to a DC voltage for use in the appropriate circuit.

This evolution has produced a number of new challenges for the service technician. The computer control can produce a variety of symptoms that do not follow the logic of older analog television receivers. The ***digital adjustments can be confusing***, since it is not always obvious which adjustment is being performed by simply looking at the display on the picture tube. Some adjustments are not changed until the receiver is turned off and back on, which makes it very difficult to know when the adjustment is correct. ***Chipper Check*** was developed to address these problems and to provide a more user-friendly method of diagnosing problems and performing adjustments.

To understand what Chipper Check does, you must know how the system control section of a digitally-controlled television operates. A representative system control section is shown in the following diagram:



In the diagram above there are four main elements to the system control section: the microprocessor, the EEPROM, the data bus, and output devices. The ***microprocessor communicates with the output devices*** to control the television. It also receives input from the television's front panel, remote control, EEPROM, and the devices on the data bus. The data bus connects all the devices in the system control section together. The output devices control the different circuits in the television.

The ***EEPROM stores values used by the microprocessor*** to control the television. These values include alignment information, initializing signals, and customer information. Examples of customer information include the channel scan list, and color, brightness, and volume levels. It is non-volatile, so it will retain its information even after power is removed.

The microprocessor communicates with the devices on the data bus whenever AC power is applied to the television. Its memory is volatile and lost when power is removed. That is when the EEPROM steps in to help. When power is applied to the television, the system control microprocessor is reset. Once the reset is complete, the microprocessor will send a signal to the EEPROM to tell it to download its information into the microprocessor.

Once the EEPROM download is complete, the microprocessor will use this information to operate the television. The ***microprocessor updates itself from the EEPROM*** and updates all the devices on the data bus once every second. This keeps the information being used by the output devices current and reduces the effect of corrupted data.

Where does the EEPROM get its information? Most of the ***values were stored in the EEPROM when the television was made***. At the factory, ATE (automatic test equipment) performs alignments and stores values in the EEPROM. Customer information is stored in the EEPROM by the microprocessor when it detects the power-off command. Chipper Check also writes information to the EEPROM when it is connected.

Chipper Check operates by taking control of the data bus. This is why none of the front panel controls of the television operate when Chipper Check is connected to the television. Once ***Chipper Check*** is in control of the bus, it ***sends data to the different output devices*** on the bus to control their operation. Chipper Check also uses the data bus to write data to the EEPROM. If an alignment is performed with Chipper Check, it communicates the alignment with that device, via the data bus, and tells it to make a change.

For example, to change vertical size, Chipper Check sends vertical size values to the T4-chip (which controls vertical size). When the T4-chip receives the information from Chipper Check, it uses it to vary the vertical drive signal, which changes vertical size. You will see the effect of the adjustment on the television picture. Once the correct size is found, Chipper Check writes that value to the EEPROM and the television will use it when Chipper Check is disconnected from the television.

Chipper Check is composed of a software and a hardware interface between the television receiver and a personal computer. It was developed ***to provide service technicians with a convenient method to diagnose and repair digitally-controlled televisions***. Chipper Check can help you with diagnosing problems, resetting incorrect data, and step you through needed adjustments. It also provides a means of keeping records of the services performed.

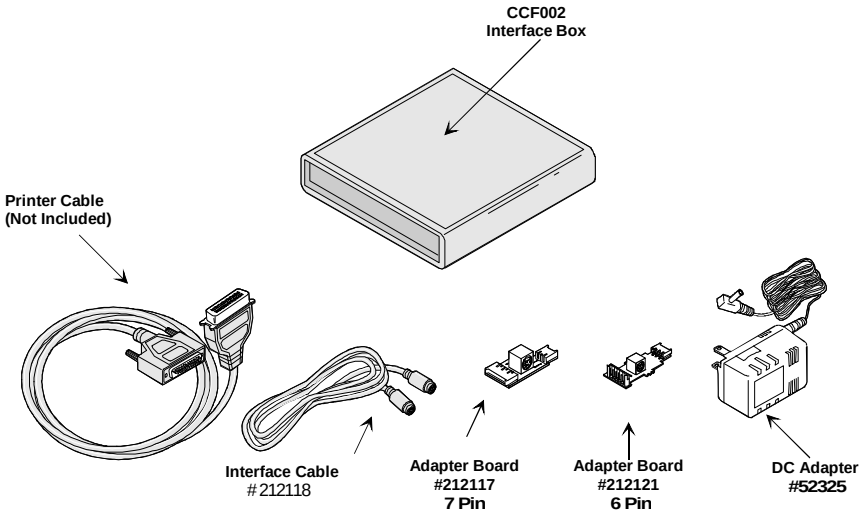
Chipper Check Package

The Chipper Check hardware package consists of ***two adapter boards*** that attach to a communications port on the television chassis, ***an interface cable***, ***an interface box***, and the DC adapter. The adapter board enables the interface to be connected to a number of different chassis families. The communication bus structure can vary from one chassis family to the next, and rather than developing a new interface box for each chassis, changing the adapter board allows the same interface box to be used.

The Chipper Check interface box provides electrical isolation between the personal computer and the television receiver. The portion of the interface that connects to the personal computer is powered from the computer's parallel port. The interface contains a switch mode power supply to provide power to the television receiver side of the interface. The interface converts the signals from the parallel port of the computer into the correct protocol for the television microprocessor.

The Chipper Check interface package includes the following items:

1. Interface box (part number CCF002)
2. Interface cable (stock number 212118)
3. DC adapter (stock number 52325)
4. Adapter board, 7 and 3 pin (stock number 212117)
5. Adapter board, 6 pin (stock number 212121)



These items are used with your own computer and a standard printer cable (not included).

What is the Chipper Check Software?

The Chipper Check software is composed of a library of routines that are unique to each chassis family. It contains ***auto–detection of the chassis type***, customer information screens, diagnostic routines, alignment routines, and extensive help files. The chassis auto–detection is used to ensure that only the alignments required for that specific chassis are present. The customer information screen gives the service technician a way to match the information gathered by Chipper Check to the specific instrument being worked on.

The diagnostic routines are used ***to read the error codes*** and to identify which IC on the chassis is not responding. The alignment routines display all alignments needed on the chassis. The help files provide information on how to use the software, how to perform the alignments, the test point locations, and troubleshooting tips.

Installing the Software

Installing the Chipper Check software is as simple as installing any Windows program. Detailed installation instructions can be found on the Chipper Check CD in a text file called “instchip.txt.”

Connecting to the Television

To connect the Chipper Check hardware, perform the following steps:

1. Connect the computer to the interface box by plugging one end of the printer cable into the interface box and the other end into the parallel (printer) port on the back of the computer.

2. Plug the adapter board into the TV service connector (located on the TV chassis).

   Note: Since this will not be a permanent connection, the lock clip on the connector board, if present, may be broken off for easier insertion.

3. Plug one end of the interface cable into the adapter board. (The other end of the interface cable will remain unplugged.)

4. Plug in the television and turn it on.

5. Place the volume control at a low setting; however, do not set the volume control at the lowest setting or Chipper Check will not be able to control the volume.

6. On the TV controls, press and hold the menu button, press the power button once, and volume up once. The technicians OSD will appear on the screen. Then, release the menu button.

7. Press either the volume up or volume down buttons until the last digits displayed on the right side of the TV screen reach 200.

8. Press channel ‡ or ˆ to lock the setting. Test the settings by pressing the power button. There should be no response.

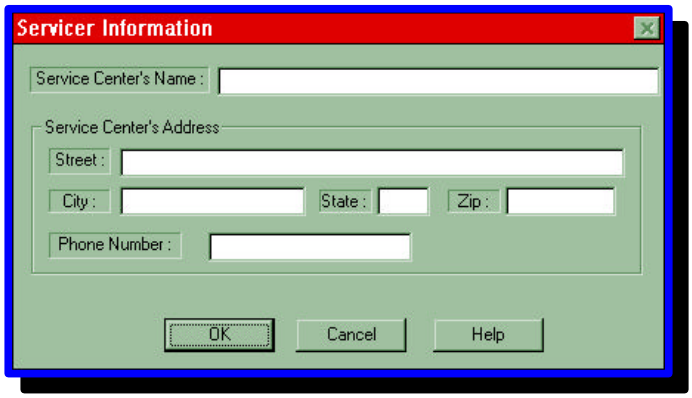
9. Plug the other end of the interface cable into the interface box.

To allow for full diagnostic capacity and for complete adjustment control of the television settings, ***the set must be put into service mode*** so that it is controlled only through the Chipper Check software. When in the service mode, the television cannot be adjusted by the television controls. This mode remains until power has been removed from the instrument being serviced.

Failure to follow the above instructions will result in the TV turning off when its power button is pressed or when the interface cable is plugged into the interface box.

Software Start Up

Start the Chipper Check software program by clicking on the "Start" button of the task bar. Then point to "Programs" and click on "Chipper Check II." The first screen to appear is the Servicer Information screen. ***This screen will only appear once***. Once the information is entered you will not see this screen again.



Servicer Information Screen

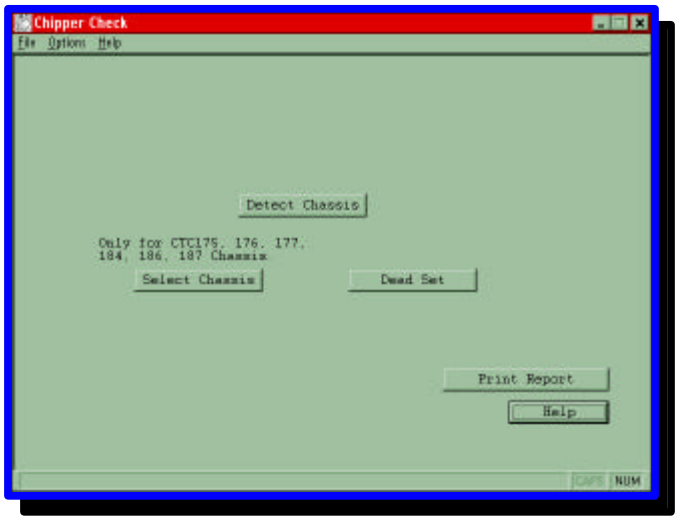
The Servicer Information is used ***to print out a certificate*** for the customer of the services performed.

Type in the following information:

1. The name of the service center.
2. The street address of the service center.
3. The city, state, and zip code of your service center.
4. The phone number of the shop for customer contact.
5. Click the OK button.

Modes

The television can be serviced by using one of the following modes: ***Select Chassis*** mode, ***Detect Chassis*** mode, or ***Dead Set*** mode.

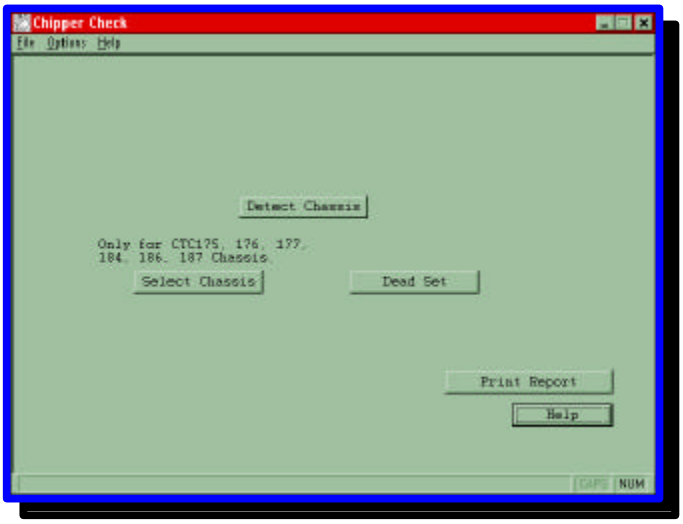


Main Screen

The Select Chassis button is used for sets with chassis numbers 175, 176, 177, 184, 186, and 187. The Detect Chassis is used with working sets with compatible chassis. The Dead Set button is used for compatible chassis that won't turn on.

Section 1—Detect Chassis Mode

The Detect Chassis mode is ***used to detect compatible chassis types***. When Chipper Check is opened, the Main screen appears.



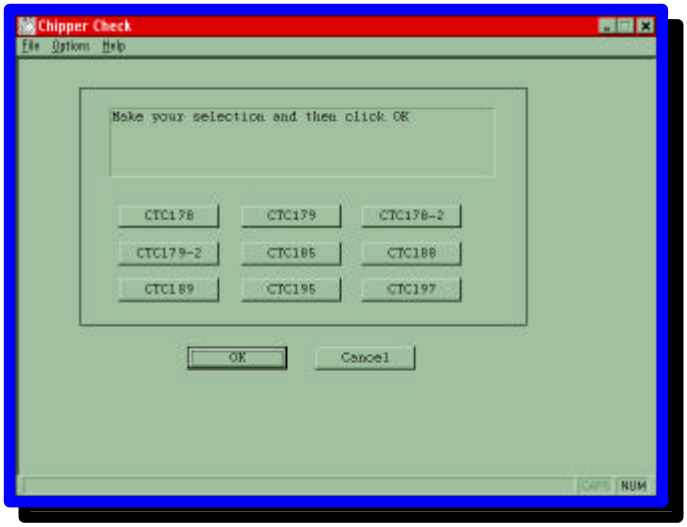
Main Screen

Chipper Check has the ability to detect compatible chassis types when the instrument is directly connected to the service adapter. With Chipper Check connected and the instrument turned on and placed in the service mode, click the Detect Chassis button to enable Chipper Check auto detection function.

In the event the wrong chassis is detected, you have the ability to override the chassis type by selecting the chassis number. If the chassis type is correct, proceed. If the chassis type is wrong, override as neccessary.

Section 2—Dead Set Mode

The Dead Set mode is ***used for Chipper Check compatible instruments that will not turn on***. On the Main screen, select the Dead Set button and a screen will appear as follows:



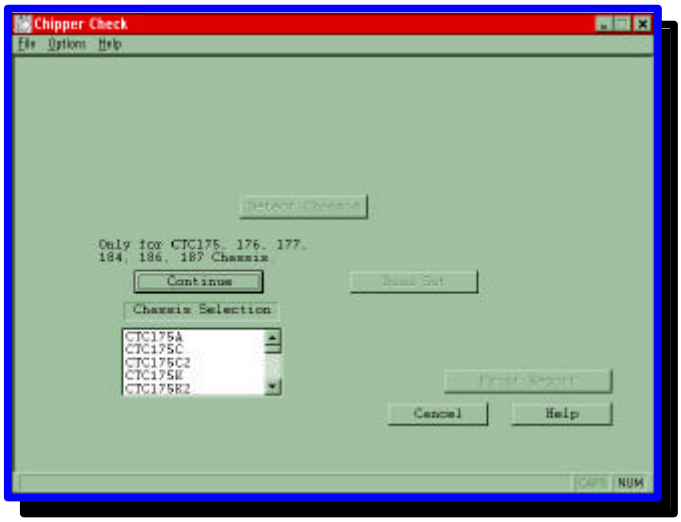
Dead Set Screen

Select the appropriate chassis on the screen above by clicking on one of the chassis numbers listed. Follow the connection instructions, which will be displayed on the screen. Then click the ***OK*** button.

In the Dead Set mode, the auto detection feature does not function, the chassis type must be selected from a list. Chipper Check then can be used ***to read error codes stored in the EEPROM.*** Also you can read and download the contents of the Main EEPROM and re-initialize the factory settings.

Section 3 — Select Chassis Mode

The Select Chassis Mode enables you to ***select a chassis model number*** for non-compatible chassis types with no service connector. This mode is used for chassis numbers 175, 176, 177, 184, 186, and 187. When the Select Chassis button is clicked on the Menu screen, the screen will appear as follows:



Select Chassis Screen

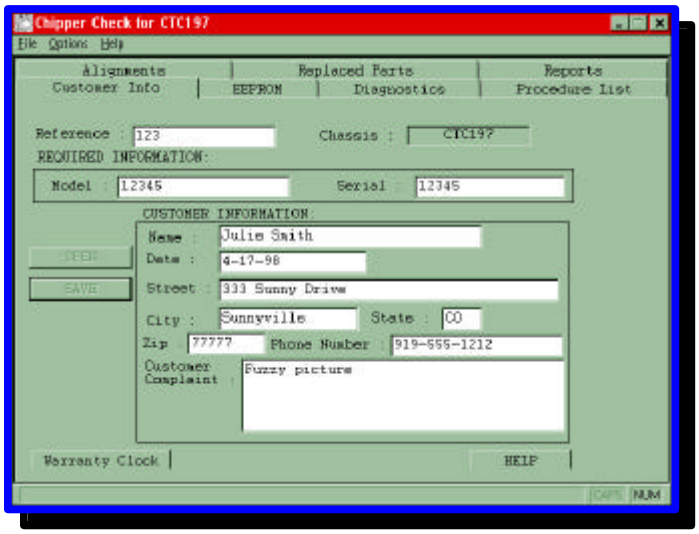
Select the appropriate chassis and apply the external 5-volt power supply to the EEPROM. Then press ***Continue***.

In the Select Chassis mode you may perform the following:

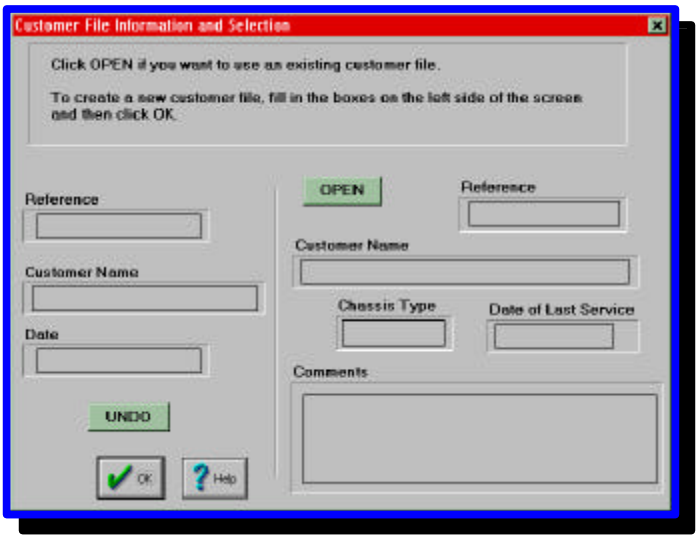
1. Re-initialize
2. Test
3. Upload
4. Download
5. View EEPROM data

Setting Up a Customer File

To set up a ***new customer file***, enter customer information on the screens below. As noted on the screens, all the information (including model and serial numbers) on the left side must be entered when prompted. One of the following Customer File Information and Selection screens appears when the chassis type has been detected:



Customer Information Screen

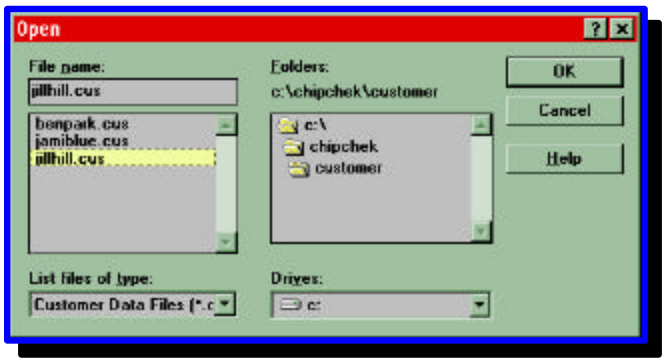


Customer File Information and Selection Screen

Enter the information on one of the screens above to create a new customer file. Creation of a customer file does not store EEPROM data! It is stored by using the download EEPROM function described later in this manual.

Saving a File

After the correct information is entered on the Customer Information screen above, click ***Save or OK*** and the following box will appear:

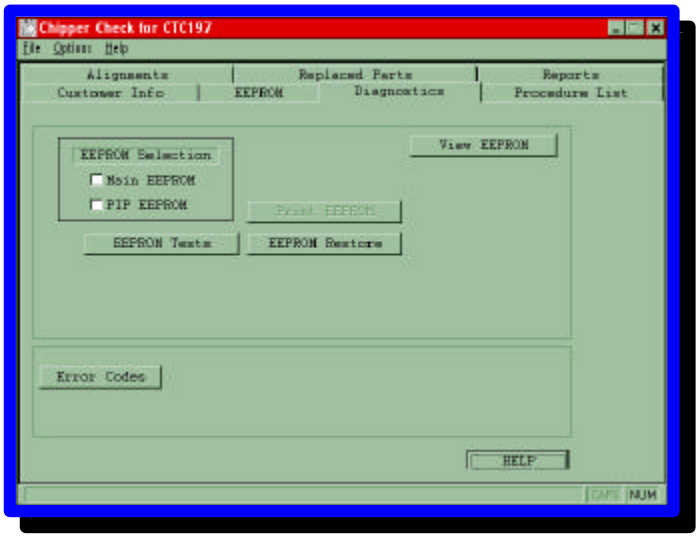


Save As or File Location Screen

Enter up to ***8 characters*** in the File name field and click ***OK***. Chipper defaults to its own customer sub-directory. Use this location for storing customer files.

Conducting EEPROM Tests

EEPROM tests are used ***to verify*** that Chipper Check has the ability to read and write to each location on the EEPROM. ***It does not verify location settings.*** From the Customer Information screen, select the Diagnostics option.



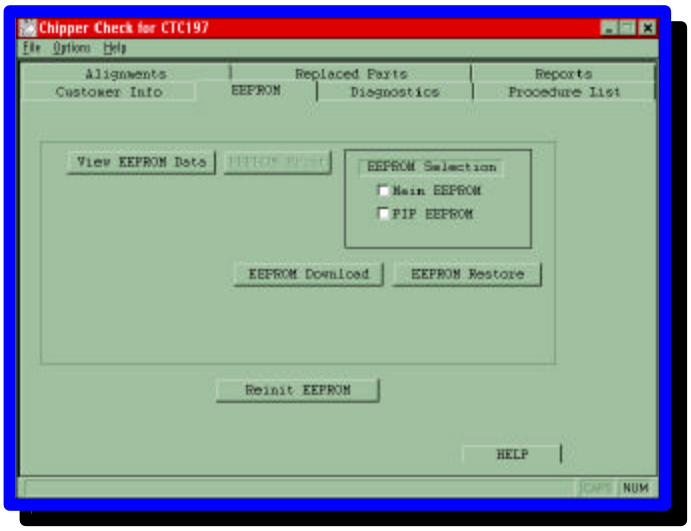
Chipper Check for CTC197 and above

The Diagnostics screen will allow you to ***select*** either the Main EEPROM, PIP (picture-in-picture) EEPROM, or the Digicon EEPROM to perform EEPROM tests, view the current EEPROM settings, ***restore*** the EEPROM to the original settings from a previously-created customer file, or ***view*** the error codes.

IMPORTANT NOTE: DO NOT RESTORE NEW EEPROMS WITH DATA FROM CORRUPTED EEPROMS!! Restoring a EEPROM with a file generated by downloading data from a corrupted EEPROM will result in corrupted data being restored into the new EEPROM.

EEPROM Re-initialization

The re-initialization of the EEPROM function ***restores the factory pre-set values*** to the EEPROM. Re-initialization will change the locations that are pre-set factory values. ***Re-initialization does not affect alignments or customer information.***



EEPROM Initialization

Copying EEPROM Data

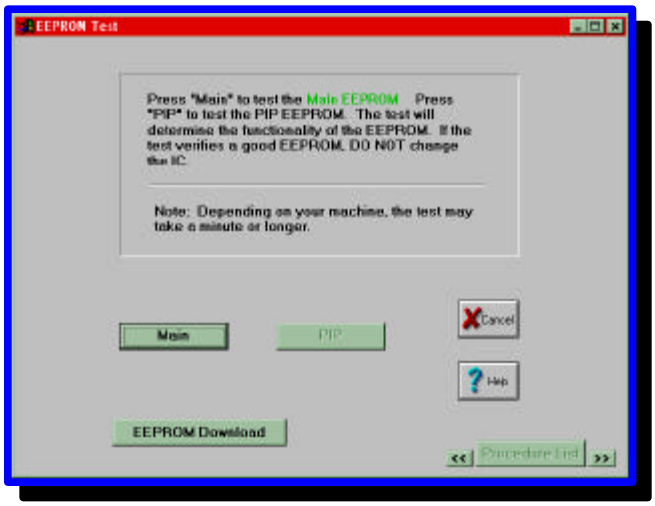
Copying EEPROM data involves ***downloading/updating and restoring*** the EEPROM data. Downloading the EEPROM data copies servicer alignment settings from the EEPROM and stores them in the customer file on the computer. This customer file can be restored to a new EEPROM, if required.

Updating an existing customer file overwrites the customer file on your computer with the television's current alignment data.

Restoring the EEPROM data copies servicer alignment settings from the customer file on the computer to the new EEPROM in the television. Note, restoring customer files to the EEPROM from which they were created simply copies identical values back to the EEPROM.

Using the Help Files

Each screen in the Chipper Check program allows access to the Help files. When help is needed ***select*** the ***Help*** button that appears on the screen or click on the hypertext entries. Hypertext appears as the colored text on various screens.


EEPROM Test
Press "Main" to test the Main EEPROM. Press "PIP" to test the PIP EEPROM. The test will determine the functionality of the EEPROM. If the test verifies a good EEPROM, DO NOT change the IC.
Note: Depending on your machine, the test may take a minute or longer.
Main
PIP
Cancel
Help
EEPROM Download
Procedure List

EEPROM Test Screen with Hypertext

The Help buttons on the screens (when present) allow access to "help" for that particular screen or topic. The help files also contain hypertext or "***linking words***." The hypertext entries appear in color (green in the example above). To find more information about a particular topic, move the pointer on top of the hypertext word. Double click the hypertext entry to view more about that topic.

Each help topic gives step-by-step procedures and many provide diagrams of a particular component of the hardware system.

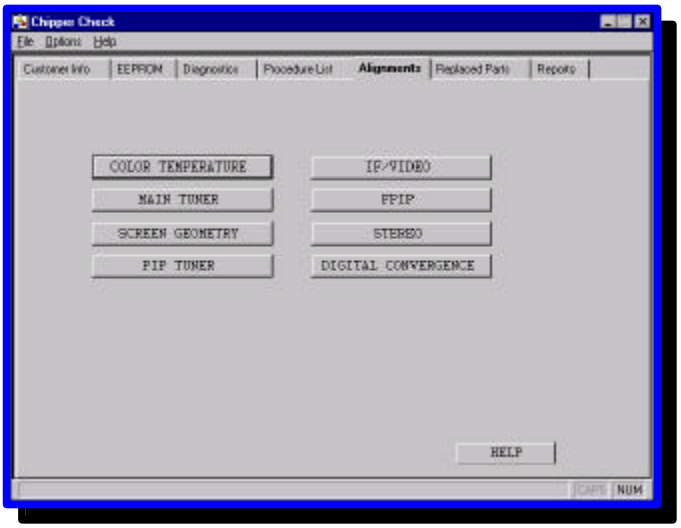
Error Codes

Chipper Check has the ability to read the error codes stored on the EEPROM, which are ***displayed on-screen*** in hypertext and are linked directly to the help files. By double clicking on the hypertext, you can access the help file for detailed information about the displayed errors.

The error codes indicate which IC is not responding to the microprocessor, or that the IC is not communicating with the microprocessor.

Performing Alignments

With the instrument on and in the service mode, and the correct chassis type has been detected, the Chipper Check alignments can be chosen by selecting one of the alignment functions on the screen below.



Alignments Menu Screen

You may perform any of the alignments shown on the screen above by clicking on the corresponding button.

The Alignment screens allow you to make adjustments by ***clicking the arrows left or right or up and down***. Other alignment screens have functions similar to the Color Temperature Alignment screen. Although the television screen changes as soon as a value is changed, the data in the EEPROM is not changed until the OK button is pressed.

Color Alignment

Color Temperature ***allows access to*** all ***adjustments*** needed to align the color temperature of a chassis/CRT after component replacement or at the consumer request. This alignment requires a video or RF generator capable of producing a gray scale pattern and an oscilloscope.

Main Tuner

Main Tuner provides ***access to all adjustments*** necessary to align the main tuner for proper reception and sensitivity. Requires a voltmeter and the TAG001 service generator (or equivalent).

Geometry Alignment

Geometry Alignment provides ***access to horizontal deflection, vertical deflection, and pincushion*** adjustments. It requires a video or RF generator capable of producing a crosshatch and color bar pattern and an oscilloscope.

PIP Tuner

The picture-in-picture (PIP) tuner alignment ***tunes the FPIPs tuner*** for optimum performance. FPIP tuner alignments will require an oscilloscope, voltmeter, TAG001 service signal generator, and video generator capable of producing a color bar pattern.

IF/Video Alignment

IF/Video ***aligns the IF and video*** circuits. These include IF APC, IF VCO, Video Level, FM level and RF AGC adjustments. This requires a voltmeter, oscilloscope, MTS signal generator, IF sweep/marker generator and an RF generator capable of producing a color bar pattern.

PIP Tuner Alignment

Tuner ***aligns the FPIP's IF circuits*** for optimum performance. Video adjustments set video-input levels, picture controls, and the comb filters D/A level. FPIP's picture controls include contrast, brightness, tint, and color. FPIP alignments require an oscilloscope, voltmeter, TAG001 service signal generator, video generator capable of producing a color bar pattern, and an S-video generator capable of generating a color bar pattern.

Stereo Alignment

The Stereo Alignments ***adjust the MTS decoder*** for optimum performance. The Stereo Alignments require a MTS signal generator, oscilloscope, and frequency counter.

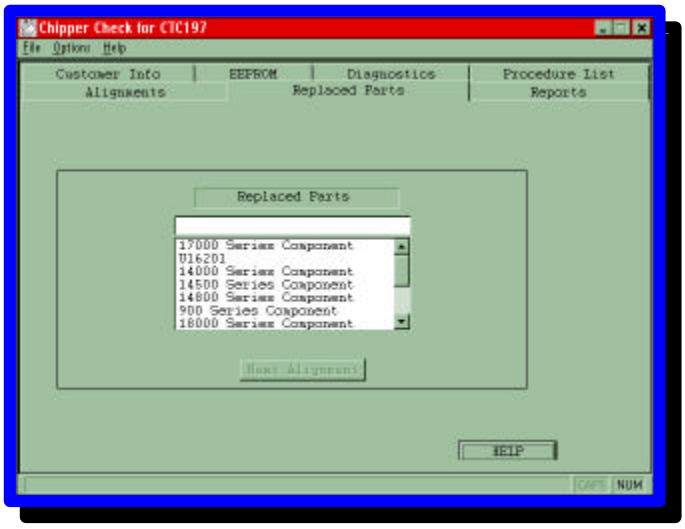
Digital Convergence (PTV)

The Digital Convergence system generates convergence yoke drive signals that ***correct the geometry of the three rasters*** from the projection CRT's in the horizontal and vertical direction so that they are rectilinear and convergent on the PTV screen. Each of the three colors includes a matrix of 13 vertical points by 16 horizontal points (208 convergence points) stored in nonvolatile digital memory.

An internally-generated crosshatch pattern can be displayed on screen, and the technician is able to access 195 points across the screen adjusting the red, green, and blue, horizontal and vertical lines where they intersect those points via software control. The range of adjustment of these cross points affects only the immediate linear area and provides enough "play" to move the line in either the vertical or horizontal direction.

Replaced Parts

To access the Replaced Parts screen, click the Replaced Parts function tab or button.



Replaced Parts Screen

The Replaced Parts screen allows you to ***select the symbol number of the replaced part*** and conduct the alignments necessary to restore the set to proper operating condition. Click on the part that was replaced, in the list, and click the Next Alignment button. When the Alignment screen appears, complete the needed alignment(s). Repeat the procedure for each replaced part.

Warranty Clock

The Warranty Clock gives details of ***how long the customer's set has been in use***. The Warranty Clock will provide a controlled, business-like approach to administering Thomson Consumer Electronics product warranties. It will help our dealers and Authorized Service Centers properly administer our product's warranties. Warranty status of TCE products displayed on the screen of the television or PC will help greatly when dealing with consumer warranty issues.

How Does it Work?

The warranty information will be stored in the product's EEPROM. This information consists of:

- Date first used.
- Number of hours the product has been operating.

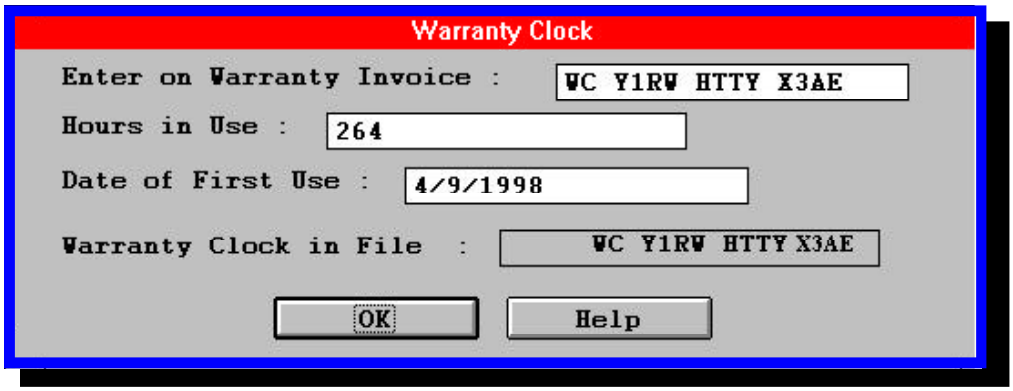
The date first used is set by an XDS or GemStar signal which is available in almost every TV market. This signal will load the month, day, and year automatically into the product's memory. The number of hours the product is on will be tracked by an internal counter. Neither the date nor the hours used can be reset by dealers or Service Centers.

The date and use data will be accessed via the TV screen or by the Service Center's PC using Chipper Check software. Chipper Check will display the warranty data on the PC screen in two forms:

- One form can be read by both the technician and the consumer.
- The other be displayed in a compressed form. This compressed code will contain the TV's serial number, date of first use, and hours used. The compressed code must be entered on the Service Center's warranty claim. Details of this procedure are outlined in the Administrative Bulletin-98004, which is included in the July 1998 issue of your Electronic Service Information (ESI).

TCE's computer will decipher the compressed code when processing the claim and determine the unit's warranty eligibility.

To reach the Warranty Clock pop-up box, click on the Customer Info tab, then click the Warranty Clock button.



Warranty Clock Screen

The Warranty clock is shown above. This screen lists all the warranty clock information stored in the EEPROM. It shows the same number of hours and date of first used as the customer's on-screen menu item.

In addition to the date of first use and hours of use, the screen also gives the warranty clock code which is to the right of the "Enter on Warranty Invoice" field. This alphanumeric code will be placed on your warranty invoice. It contains information about the set at the time of service.

The "warranty clock in file" field contains the warranty clock code at the time the customer file is saved. Refer to page 14 for instructions on how to save a customer file. This information is provided in case there is a question regarding the validity of the warranty clock code placed on the warranty invoice. This information can be viewed by opening a customer file and does not require reconnecting to the set with the questionable code.

Frequently Asked Questions

Question: Why is the television turning off when I connect the interface cable to it?

Answer: You are activating the communication bus in the interface box by connecting Chipper Check prematurely. Do not connect the instrument to the interface box until the instrument is on, in the service mode, the Chipper Check program is running, and the first screen of the program is visible. Failure to comply with this requirement will cause the instrument to shut down.

Question: What does it mean when I get the message "Communication is not established?"

Answer: Chipper Check was designed to verify communication with the microprocessor. In the event that Chipper Check is unable to "talk" to the microprocessor it will display the "Communication is not Established" message. This is an indication of hardware failure between the chassis and the computer. Those components and their connections need to be checked and repaired or replaced as needed.

Question: I'm working on a CTC197, and it's not on the Select Chassis list?

Answer: The main screen on Chipper Check II contains three primary buttons—Select Chassis, Detect Chassis, and Dead Set. The Select Chassis option is for the earlier chassis that were manufactured prior to the advent of Chipper Check. By using this option, you can connect directly to the EEPROM by using an EEPROM clip. The Detect Chassis and Dead Set buttons are used when you are servicing a Chipper Check compatible instrument and using the adapter board to connect the Chipper Check interface to the motherboard of the instrument.

Question: What is happening when I re-initialize the EEPROM?

Answer: The factory settings need to be re-initialized only after you have verified the ability to read and write to the EEPROM by running the diagnostic EEPROM test. The re-initialization resets the locations on the EEPROM, which are not accessible to the service technician and are not related to customer settings. Re-initialization files are not contained in the customer file; they are contained inside the Chipper Check program and are specific to different models and chassis. Therefore, restoring a customer file in itself does not ensure that the EEPROM has been re-initialized to factory specifications.

Question: When should I create a customer file?

Answer: Customer files should be created when it becomes necessary to save the service technician's alignment settings such as when an error occurs in writing to the EEPROM. If you wish, you may save the customer file to the computer as an archive of good values for that instrument. There is no reason to create a customer file and restore that file to the same EEPROM, as you are simply copying the same data back and forth.

Question: I'm working on a CTC185 and the adapter board won't fit.

Answer: It may be necessary to break off the locking tab on J3104. This tab is not needed. Once it is removed, the Chipper Check adapter board will then fit into the connection.

Question: Why is there colored text and Show Topic buttons on some Chipper Check screens, and what do they mean?

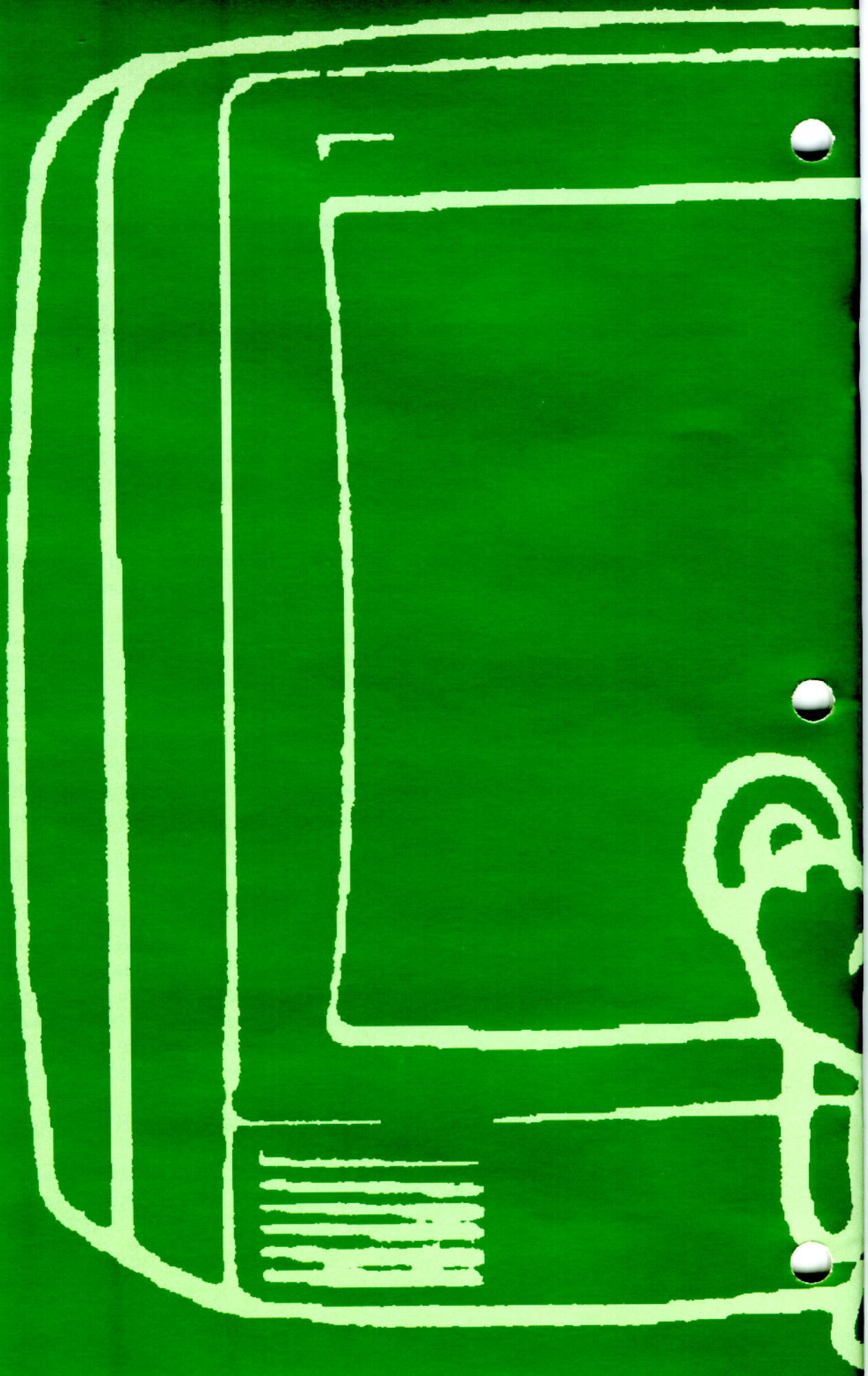
Answer: Colored text indicates that there is a hyperlink of the context-sensitive help file. Double clicking on this text will launch Chipper Check help directly to the detailed topic referred to by that link. This is useful, especially when you wish to view the error codes. All error code messages are linked with hypertext to the files. The Show Topic buttons are found on the alignment screens when servicing the CTC195 and 197 chassis. They refer to the topic(s) listed in the pull-down list next to the button. They link the drawings, waveforms, and other pertinent information necessary to perform that specific alignment.

Question: Why is there a help button on almost every screen in Chipper Check?

Answer: Chipper Check contains several different help files. The on-screen help buttons are designed to provide a direct link to the appropriate help file as it pertains to the purpose of that screen. For example, the help button on an alignment screen will provide information on the purpose of the alignment and trouble shooting hints if the alignment cannot be successfully completed. This eliminates the need for the service technician to have to search the topics to find the one that relates to that particular procedure.

Question: How do I obtain technical support for my Chipper Check program?

Answer: Technical support is available for Chipper Check and all Tech Aid software by calling the Tech Aid Help Line at 1-800-711-6913 from 8:00 a.m. to 5:00 p.m. EST.



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